



## Frequency measurements of the 110 GHz gyrotron used for fast ion CTS diagnostics at TEXTOR

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**Frequency Measurements of the 110 GHz Gyrotron  
used for Fast Ion CTS Diagnostics at TEXTOR<sup>1</sup>**

P.P. WOSKOV, MIT PSFC, S.B. KORSHOLM, MIT and Risoe National Laboratory, F. MEO, E.L. TSAKADZE, Risoe, J.W. OOSTERBEEK, K. JAKUBOWSKA, Forschungszentrum Juelich Institut für Plasmaphysik, J. SCHOLTEN, C. TITO, FOM Institute for Plasma Physics, Rijnhuizen — High resolution frequency measurements during TEXTOR plasma operation have been carried out of the 110 GHz gyrotron as used for fast ion collective Thomson scattering (CTS) diagnostics. A pickoff sample of the gyrotron beam was frequency downshifted by both homodyne and heterodyne methods and fast Fourier transformed (FFT) by a 300 MHz bandwidth digitizing oscilloscope. The gyrotron was operated in a macro pulse of 100, 2 ms pulses distributed over about a 1 s time period during TEXTOR plasma flat top. The frequency was sampled near the beginning and end of the gyrotron macro pulse. The gyrotron frequency was found to be relatively clean and reproducible from plasma shot to plasma shot except for  $\pm 18$  MHz components at about -40 dB in some data. During a single macro pulse a downward frequency drift of 14 MHz was observed. An instrumentally limited instantaneous linewidth of <100 kHz at half maximum and <200 kHz at -40 dB was also observed. The TEXTOR ICRH system did not fire reliably during these measurements to assess its effect on the gyrotron spectrum.

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☐ Prefer Oral Session  
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